(19) World Intellectual Property **Organization** International Bureau





(43) International Publication Date 23 June 2005 (23.06.2005)

(10) International Publication Number WO 2005/056495 A1

(51) International Patent Classification⁷: C04B 35/5831. 35/5835, 35/628, B23B 27/14

PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(21) International Application Number:

PCT/US2004/040291

(22) International Filing Date: 3 December 2004 (03.12.2004)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

60/526,576

3 December 2003 (03.12.2003) US

(71) Applicant (for all designated States except US): DIA-MOND INNOVATIONS, INC. [US/US]; 6325 Huntley Road, Worthington, 43085 (US).

(72) Inventors; and

- (75) Inventors/Applicants (for US only): DOLE, Stephen, L. [US/US]; 1195 Vinewood Drive, Columbus, OH 43229 (US). WEBB, Steven, W. [US/US]; 253 Weydon Road, Worthington, OH 43085 (US). MCHALE, JR., James, M. [US/US]; 6657 Rieber Street, Worthington, OH 43085 (US).
- (74) Agent: SINGER, James, M.; Pepper Hamilton LLP, One Mellon Center, 50th Floor, 500 Grant Street, Pittsburgh, 15219 (US).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,

GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN,

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH,

Declarations under Rule 4.17:

GQ, GW, ML, MR, NE, SN, TD, TG).

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations

Published:

with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: CUBIC BORON NITRIDE SINTERED BODY AND METHOD FOR MAKING THE SAME

(57) Abstract: A cubic boron nitride sintered body is provided having improved strength and hardness for serving as a cutting tool. The sintered body includes cBN dispersed in a binder material, wherein the binder includes alumina, at least one other aluminum compound, and a non-aluminum material such as a carbide, nitride, carbonitride, boride or silicide of Groups IVa, Va, and VIa of the periodic table, or a mixture thereof.